**Rube Goldberg Machine Project**

**Task: Design and build a Rube Goldberg machine that will “smash an alarm clock”.** (see rules & criteria)

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| Your team’s work will be evaluated using the following rubric.  **Rube Goldberg Project Evaluation Criteria** | **Pts Possible** | | **Pts Earned** |
| ***Phase One - Planning and Design (10 points)*** | | | |
| Team brainstorms & produces detailed material list & annotated diagrams | | **10** | |
| ***Phase Two - Building & Testing (30 points)*** | | | |
| Collaboration & teamwork during building & testing | | **10** | |
| Problem solving to resolve mistakes, and challenges | | **10** | |
| Material management (clean work area, materials not wasted, stored properly) | | **5** | |
| Consistently cleaning up completely and on time | | **5** | |
| ***Phase Three - Presentation of Completed Machine (60 points)*** | | | |
| Machine successfully completes task | | **10** | |
| Machine comprised of 10 or more unique steps | | **16** | |
| Originality - at least one step | | **4** | |
| Repeatable - 2 consecutive successful runs within 5 minute presentation time | | **5** | |
| 5 or more labeled simple machines (must include lever, pulley, inclined plane) | | **10** | |
| 5 or more labeled potential energy, kinetic energy changes | | **5** | |
| Self and group evaluation of process and outcome | | **10** | |
| ***Penalties and Bonuses*** | | | |
| Each touch of machine during presentation run | | **-1** | |
| Each skipped step during presentation run | | **-3** | |
| Creative display or presentation | | **Up to +3** | |
| Engineering marvel bonus (creative & inventive design & construction) | | **Up to +3** | |
| ***TOTAL POINTS*** | | **Up to 100** | |

**Schedule (Subject to Change)**

Day 1: brainstorming, planning, design drawing(s), & material list

Days 2-4: construction, testing, & analysis

Day 5: reflection & redesign

Day 6: construction, testing, & analysis

Day 7: reflection & final preparation for presentations

Day 8: presentations

**Rules**

safety: safe for participants & observers; safety glasses required;

no hazardous materials, explosives, or flame

physical size: must fit on base (2’x2’), no height limitation

electrical energy: If electrical energy is used, it must only come from a battery

or batteries.

live animals: not allowed

steps: A step in the machine is a transfer of energy from one action to

another action. Identical transfers of energy in succession are

counted as 1 step.

**example: A sequence of dominoes hitting each other is counted as 1 step. Counting 100 dominoes as 100**

**steps is repetitive and not in the spirit of Rube Goldberg.**

programmable controllers are allowed if their use fits within the definition of

controllers a step and are not used as a fail-safe.

**example: A ball falls onto a switch connected to a controller that turns on a motor.**

**NO: Motor turns on regardless of whether or not the ball hits the switch.**